

Mun U.S. Serial No. 10/699,438
Page 2 of 10

Amendments to the Claims:

The following listing of claims will replace any/all prior versions, and listings, of claims in the application, wherein additions are shown in underlined text and deletions are shown in strike-out text or between brackets ([]):

1. (Currently Amended) A silicon wafer having a front surface, a back surface, a central axis, a circumferential edge portion and a region between the front and back surfaces, the silicon wafer comprising:

a first denuded zone being formed up to a predetermined distance from the front surface;

a second denuded zone being formed up to a predetermined distance from the back surface; and

a bulk region being formed between the first and second denuded zones,

wherein a first concentration profile of defects in the bulk region has a distribution which is maintained substantially constant in a direction from the front surface to the back surface;

wherein a second concentration distribution of defects in the bulk region is maintained substantially constant in a direction from the central axis to the circumferential edge portion; and,

said defects being bulk micro-defects (BMD) including oxygen precipitates and bulk stacking faults.

2. (Canceled)

3. (Currently Amended) A silicon wafer according to claim [2] 1, wherein the concentration of the defects in the region between the first and the second denuded zones has a distribution which is maintained constant in a range from about 3.0×10^8 ea/cm³ to about 1.0×10^{10} ea/cm³.

4. (Currently Amended) A silicon wafer having a front surface, a back surface, a central axis, a circumferential edge portion and a region between the front and back surfaces, the silicon wafer comprising:

a first denuded zone being formed up to a predetermined distance from the front surface;

Mun U.S. Serial No. 10/699,438
Page 3 of 10

a second denuded zone being formed up to a predetermined distance from the back surface; and,

a bulk region being formed between the first and second denuded zones,

wherein a first concentration profile of defects in the bulk region has a distribution which is maintained substantially constant in a direction from the front surface to the back surface;

wherein a second concentration distribution of defects in the bulk region is maintained substantially constant in a direction from the central axis to the circumferential edge portion; and

wherein the defects are bulk stacking faults.

5. (Original) A silicon wafer according to claim 4; wherein the concentration of the defects in the region between the first and the second denuded zones has a distribution which is maintained constant in a range from about 1.0×10^8 ea/cm³ to about 3.0×10^9 ea/cm³.

6. (Currently Amended) A silicon wafer according to claim 1, wherein the distances of the first and the second denuded zones from the front and back surfaces respectively are in a range from about 5 μ m to about 40 μ m and are substantially constant in a direction from the central axis to the circumferential edge portion.

7. (Original) A silicon wafer according to claim 1, wherein the first and the second denuded zones are substantially defectless regions in which oxygen precipitates and bulk stacking faults are substantially removed.

8. (Currently Amended) A silicon wafer having a front surface, a back surface, a central axis, a circumferential edge portion and a region between the front and back surfaces, wherein the region between the front and back surfaces comprises:

a first denuded zone being formed up to a predetermined distance from the front surface;

a second denuded zone being formed up to a predetermined distance from the back surface; and

a bulk region being formed between the first and second denuded zones,

Mun U.S. Serial No. 10/699,438
Page 4 of 10

wherein a first concentration profile of defects between the front and back surfaces of the wafer has a stepwise shape having an axial symmetry at the center between the front and back surfaces of the wafer,

wherein the bulk region has vertically-rising first concentration gradients at boundaries of the first and second denuded zones and a horizontal first concentration gradient over the bulk region, and

wherein [a] the first concentration profile of defects in the bulk region has a planar shape within a range of variation of about 10% or less,

wherein a second concentration distribution of defects in the bulk region has a range of variation of about 10% or less in a direction from the central axis to the circumferential edge portion; and,

said defects being bulk micro-defects (BMD) including oxygen precipitates and bulk stacking faults.

9. (Canceled)

10. (Currently Amended) A silicon wafer according to claim [9] 8, wherein the concentration of the defects in the region between the first and the second denuded zones has a distribution which is maintained constant in a range from about 3.0×10^8 ea/cm³ to about 1.0×10^{10} ea/cm³.

11. (Currently Amended) A silicon wafer having a front surface, a back surface, a central axis, a circumferential edge portion and a region between the front and back surfaces, wherein the region between the front and back surfaces comprises:

a first denuded zone being formed up to a predetermined distance from the front surface;

a second denuded zone being formed up to a predetermined distance from the back surface; and

a bulk region being formed between the first and second denuded zones,

wherein a first concentration profile of defects between the front and back surfaces of the wafer has a stepwise shape having an axial symmetry at the center between the front and back surfaces of the wafer,

Mun U.S. Serial No. 10/699,438
Page 5 of 10

wherein the bulk region has vertically-rising first concentration gradients at boundaries of the first and second denuded zones and a horizontal first concentration gradient over the bulk region,

wherein [a] the first concentration profile of defects in the bulk region has a planar shape within a range of variation of about 10% or less,

wherein a second concentration distribution of defects in the bulk region has a range of variation of about 10% or less in a direction from the central axis to the circumferential edge portion; and

wherein the defects are bulk stacking faults.

12. (Original) A silicon wafer according to claim 11, wherein the concentration of the defects in the region between the first and the second denuded zones has a distribution which is maintained constant in a range from about 1.0×10^8 ea/cm³ to 3.0×10^9 ea/cm³.

13. (Currently Amended) A silicon wafer according to claim 8, wherein the distances of the first and the second denuded zones from the front and back edges respectively are in a range from about 5 μ m to about 40 μ m and have a range of variation of about 10% in a direction from the central axis to the circumferential edge portion.

14. – 46. (Canceled)

47. (New) A silicon wafer having a front surface, a back surface, a circumferential edge portion and a region between the front and back surfaces, wherein the region between the front and back surfaces comprises:

a first denuded zone being formed up to a predetermined distance from the front surface;

a second denuded zone being formed up to a predetermined distance from the back surface; and

a bulk region being formed between the first and second denuded zones,

wherein a concentration profile of defects between the front and back surfaces of the wafer has a stepwise shape having an axial symmetry at the center between the front and back surfaces of the wafer,

Mun U.S. Serial No. 10/699,438
Page 6 of 10

wherein the bulk region has vertically-rising concentration gradients at boundaries of the first and second denuded zones and a horizontal concentration gradient over the bulk region,

wherein a concentration profile of defects in the bulk region has a planar shape within a range of variation of about 10% or less, and

wherein the concentration of the defects in the region between the first and the second denuded zones has a distribution which is maintained constant in a range from about 3.0×10^8 ea/cm³ to about 1.0×10^{10} ea/cm³,

said defects being bulk micro-defects (BMD) including oxygen precipitates and bulk stacking faults.

48. (New) A silicon wafer according to claim 47, wherein the distances of the first and the second denuded zones from the front and back edges respectively are in a range from about 5 μ m to about 40 μ m.